Figure J-47. Highway and rail routes used to analyze transportation impacts - Missouri.

Table J-88. Estimated transportation impacts for the States of Montana, North Dakota, and South Dakota (page 1 of 2).

Impact category	Mostly legal-weight truck	Mostly rail Ending rail node in Nevada[a]					
		Caliente[b]	Dry Lake[c]	Jean[d]	Beowawe[e]	Eccles[f]	Apex[g]
MONTANA							
Shipments							
Truck (originating/total)	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Rail (originating/total)	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[b]	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Workers (person-rem/LCFs)	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Accident dose risk							
Population (person-rem/LCFs)	0	0	0	0	0	0	0
Nonradiological impacts							
Vehicle emissions (LCFs)	0	0	0	0	0	0	0
Fatalities	0	0	0	0	0	0	0
NORTH DAKOTA							
Shipments							
Truck (originating/total)	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Rail (originating/total)	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Workers (person-rem/LCFs)	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Accident dose risk							
Population (person-rem/LCFs)	0	0	0	0	0	0	0
Nonradiological impacts							
Vehicle emissions (LCFs)	0	0	0	0	0	0	0
Fatalities	0	0	0	0	0	0	0
SOUTH DAKOTA							
Shipments							
Truck (originating/total)	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Rail (originating/total)	0/0	0/32	0/32	0/32	0/32	0/32	0/32
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	$0.0\times10^0/0.0\times10^0$	$1.8\times10^{-3}/9.0\times10^{-7}$	$1.8\times10^{-3}/9.0\times10^{-7}$	$1.8\times10^{-3}/9.0\times10^{-7}$	$1.8\times10^{-3}/9.0\times10^{-7}$	$1.8\times10^{-3}/9.0\times10^{-7}$	$1.8\times10^{-3}/9.0\times10^{-7}$
Workers (person-rem/LCFs)	$0.0\times10^0/0.0\times10^0$	$4.0\times10^{-2}/1.6\times10^{-5}$	$4.0\times10^{-2}/2.0\times10^{-5}$	$4.0\times10^{-2}/1.6\times10^{-5}$	$4.0\times10^{-2}/1.6\times10^{-5}$	$4.0\times10^{-2}1.6\times10^{-5}$	$4.0\times10^{-2}/1.6\times10^{-5}$
Accident dose risk							
Population (person-rem/LCFs)	$0.0\times10^0/0.0\times10^0$	$7.3\times10^{-6}/3.7\times10^{-9}$	$7.3\times10^{-6}/3.7\times10^{-9}$	$7.3\times10^{-6}/3.7\times10^{-9}$	$7.3\times10^{-6}/3.7\times10^{-9}$	$7.3\times10^{-6}/3.7\times10^{-9}$	$7.3\times10^{-6}/3.7\times10^{-9}$
Nonradiological impacts							
Vehicle emissions (LCFs)	0.00×10^0	1.04×10^{-6}	1.04×10^{-6}	1.04×10^{-6}	1.04×10^{-6}	1.04×10^{-6}	1.04×10^{-6}
Fatalities	0.0×10^0	2.1×10^{-5}	2.1×10^{-5}	2.1×10^{-5}	2.1×10^{-5}	2.1×10^{-5}	2.1×10^{-5}

a. Under the mostly rail scenario, rail shipments would arrive in Nevada at one of six existing rail nodes. Impacts would vary according to the node. From that node, DOE would use one of the rail or heavy-haul implementing alternatives to complete the transportation to Yucca Mountain (see Section J.1.2).

b. For heavy-haul truck transportation, the Caliente junction is the location of the proposed Caliente intermodal transfer station for heavy-haul trucks near the town of Caliente in eastern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on one of the Caliente, Caliente/ Chalk Mountain, or Caliente/Las Vegas routes. For branch rail line transportation, railcars would transfer via the Caliente Option to the Caliente Corridor at the Caliente junction.

Table J-88. Estimated transportation impacts for the States of Montana, North Dakota, and South Dakota (page 2 of 2).

c. For heavy-haul truck transportation, the Dry Lake junction is near the location of the proposed Apex/Dry Lake intermodal transfer station for heavy-haul trucks in southeast Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Apex/Dry Lake route.

d. For heavy-haul truck transportation, the Jean junction is near the location of the proposed Sloan/Jean intermodal transfer station for heavy-haul trucks in southern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Sloan/Jean route. For branch rail line transportation, railcars would transfer from the mainline railroad via the Wilson Pass or Stateline Pass Option of the Jean Corridor, near the Jean junction.

e. For branch rail line transportation, railcars would transfer from the mainline railroad at the Beowawe junction in north-central Nevada to the Carlin Corridor.

f. For branch rail line transportation, railcars would transfer from the mainline railroad at the Eccles junction east of Caliente, Nevada, via the Eccles Option or nearby via the Crestline Option of the Caliente or Caliente-Chalk Mountain Corridor. Impacts in states outside Nevada would be the same for the Eccles and Crestline Options of the Caliente and Caliente-Chalk Mountain Corridors.

g. For branch rail line transportation, railcars would transfer from the mainline railroad at the Apex junction in southeast Nevada, possibly via the Valley Connection, to the Valley Modified Corridor.
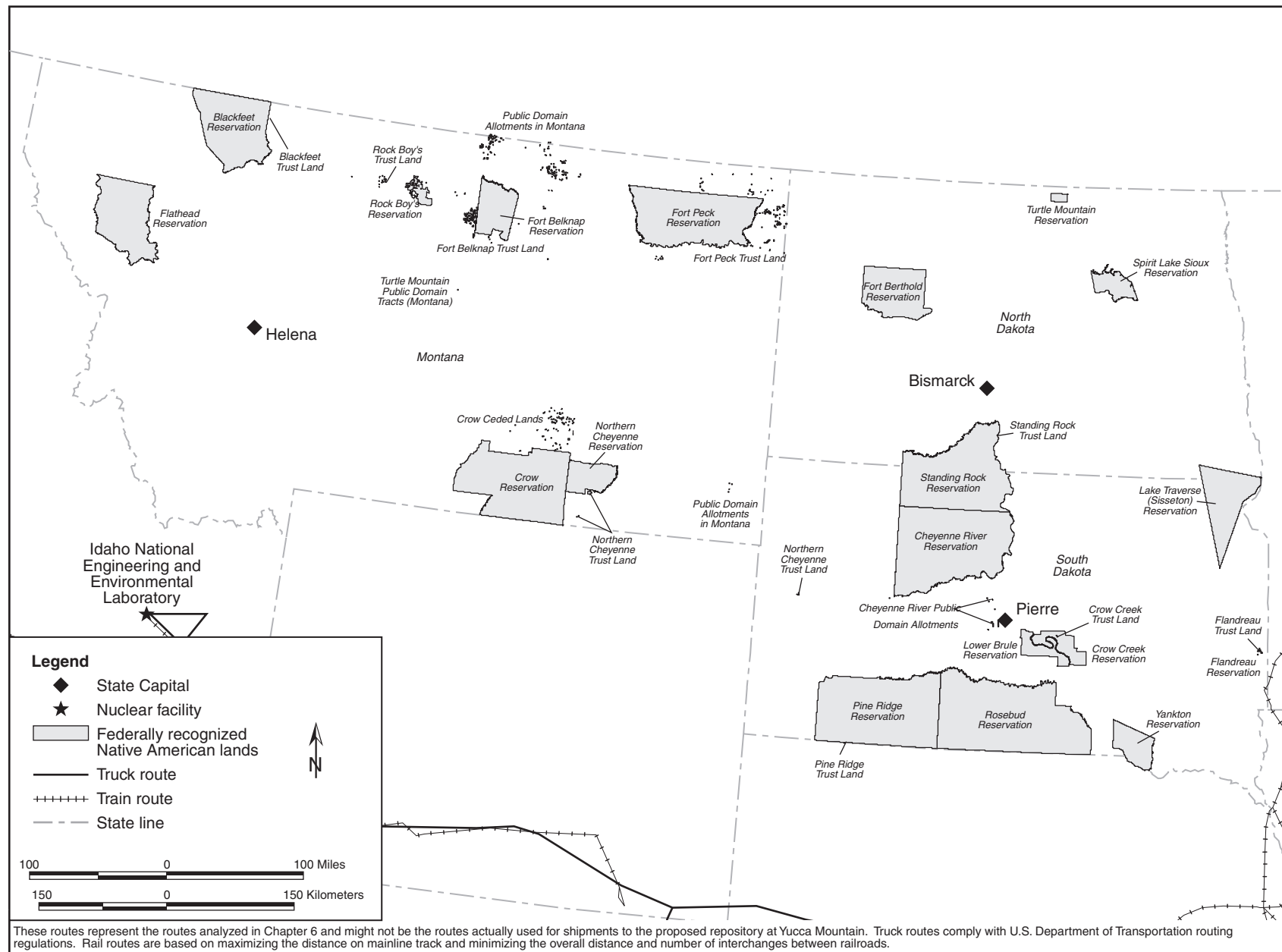
h. LCF = latent cancer fatality.

Blackfeet
Reservation

Blackfeet
Trust Land

Public Domain
Allotments in Montana

Rock Boy's
Trust Land

Turtle Mountain
Reservation

Flathead
Reservation

Rock Boy's
Reservation

Fort Belknap
Reservation

Fort Peck
Reservation

Spirit Lake Sioux
Reservation

Fort Belknap Trust Land

Fort Peck Trust Land

Fort Berthold
Reservation

Turtle Mountain
Public Domain
Tracts (Montana)

*North
Dakota*

◆ Helena

Montana

Bismarck ◆

Crow Ceded Lands

Northern
Cheyenne
Reservation

Standing Rock
Trust Land

Crow
Reservation

Standing Rock
Reservation

Lake Traverse
(Sisseton)
Reservation

Idaho National
Engineering and
Environmental
Laboratory

Northern
Cheyenne
Trust Land

Public Domain
Allotments
in Montana

Northern
Cheyenne
Trust Land

Cheyenne River
Reservation

*South
Dakota*

★

Cheyenne River Public

Pierre

Crow Creek
Trust Land

Flandreau
Trust Land

Domain Allotments

◆

Lower Brule
Reservation

Crow Creek
Reservation

Flandreau
Reservation

Legend

◆ State Capital

★ Nuclear facility

Federally recognized
Native American lands

Pine Ridge
Reservation

Rosebud
Reservation

Yankton
Reservation

N

Truck route

+++++ Train route

— · — State line

Pine Ridge
Trust Land

| 100 | 0 | 100 Miles |

| 150 | 0 | 150 Kilometers |

These routes represent the routes analyzed in Chapter 6 and might not be the routes actually used for shipments to the proposed repository at Yucca Mountain. Truck routes comply with U.S. Department of Transportation routing regulations. Rail routes are based on maximizing the distance on mainline track and minimizing the overall distance and number of interchanges between railroads.

Figure J-48. Highway and rail routes used to analyze transportation impacts - Montana, North Dakota, and South Dakota.

Table J-89. Estimated transportation impacts for the States of New Jersey and Pennsylvania.

		Mostly rail					
		Ending rail node in Nevada[a]					
Impact category	Mostly legal-weight truck	Caliente[b]	Dry Lake[c]	Jean[d]	Beowawe[e]	Eccles[f]	Apex[g]
NEW JERSEY							
Shipments							
Truck (originating/total)	1,528/3,245	0/335	0/335	0/335	0/335	0/335	0/335
Rail (originating/total)	0/0	244/244	244/244	244/244	244/244	244/244	244/244
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	$1.2 \times 10^1/6.1 \times 10^{-3}$	$1.0 \times 10^1/5.1 \times 10^{-3}$	$1.0 \times 10^1/5.1 \times 10^{-3}$	$1.0 \times 10^1/5.1 \times 10^{-3}$	$1.0 \times 10^1/5.1 \times 10^{-3}$	$1.0 \times 10^1/5.1 \times 10^{-3}$	$1.0 \times 10^1/5.1 \times 10^{-3}$
Workers (person-rem/LCFs)	$4.6 \times 10^1/1.8 \times 10^{-2}$	$1.7 \times 10^1/6.9 \times 10^{-3}$	$1.7 \times 10^1/6.9 \times 10^{-3}$	$1.7 \times 10^1/6.9 \times 10^{-3}$	$1.7 \times 10^1/6.9 \times 10^{-3}$	$1.7 \times 10^1/6.9 \times 10^{-3}$	$1.7 \times 10^1/6.9 \times 10^{-3}$
Accident dose risk							
Population (person-rem/LCFs)	$2.9 \times 10^{-3}/1.5 \times 10^{-6}$	$1.3 \times 10^{-2}/6.7 \times 10^{-6}$	$1.3 \times 10^{-2}/6.7 \times 10^{-6}$	$1.3 \times 10^{-2}/6.7 \times 10^{-6}$	$1.3 \times 10^{-2}/6.7 \times 10^{-6}$	$1.3 \times 10^{-2}/6.7 \times 10^{-6}$	$1.3 \times 10^{-2}/6.7 \times 10^{-6}$
Nonradiological impacts							
Vehicle emissions (LCFs)	3.3×10^{-3}	3.4×10^{-3}	3.4×10^{-3}	3.4×10^{-3}	3.4×10^{-3}	3.4×10^{-3}	3.4×10^{-3}
Fatalities	0.007	0.022	0.022	0.022	0.022	0.022	0.022
PENNSYLVANIA							
Shipments							
Truck (originating/total)	3,803/11,485	0/580	0/580	0/580	0/580	0/580	0/580
Rail (originating/total)	0/0	661/2,078	661/2,078	661/2,078	661/2,078	661/2,078	661/2,078
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	$1.0 \times 10^2/5.1 \times 10^{-2}$	$6.9 \times 10^1/3.4 \times 10^{-2}$	$6.9 \times 10^1/3.4 \times 10^{-2}$	$6.9 \times 10^1/3.4 \times 10^{-2}$	$6.9 \times 10^1/3.4 \times 10^{-2}$	$6.9 \times 10^1/3.4 \times 10^{-2}$	$6.9 \times 10^1/3.4 \times 10^{-2}$
Workers (person-rem/LCFs)	$3.1 \times 10^2/1.2 \times 10^{-1}$	$9.4 \times 10^1/3.8 \times 10^{-2}$	$9.4 \times 10^1/3.8 \times 10^{-2}$	$9.4 \times 10^1/3.8 \times 10^{-2}$	$9.4 \times 10^1/3.8 \times 10^{-2}$	$9.4 \times 10^1/3.8 \times 10^{-2}$	$9.4 \times 10^1/3.8 \times 10^{-2}$
Accident dose risk							
Population (person-rem/LCFs)	$1.0 \times 10^{-2}/5.1 \times 10^{-6}$	$5.5 \times 10^{-2}/2.7 \times 10^{-5}$	$5.5 \times 10^{-2}/2.7 \times 10^{-5}$	$5.5 \times 10^{-2}/2.7 \times 10^{-5}$	$5.5 \times 10^{-2}/2.7 \times 10^{-5}$	$5.5 \times 10^{-2}/2.7 \times 10^{-5}$	$5.5 \times 10^{-2}/2.7 \times 10^{-5}$
Nonradiological impacts							
Vehicle emissions (LCFs)	1.3×10^{-2}	2.9×10^{-2}	2.9×10^{-2}	2.9×10^{-2}	2.9×10^{-2}	2.9×10^{-2}	2.9×10^{-2}
Fatalities	0.099	0.066	0.066	0.066	0.066	0.066	0.066

a. Under the mostly rail scenario, rail shipments would arrive in Nevada at one of six existing rail nodes. Impacts would vary according to the node. From that node, DOE would use one of the rail or heavy-haul implementing alternatives to complete the transportation to Yucca Mountain (see Section J.1.2).

b. For heavy-haul truck transportation, the Caliente junction is the location of the proposed Caliente intermodal transfer station for heavy-haul trucks near the town of Caliente in eastern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on one of the Caliente, Caliente/ Chalk Mountain, or Caliente/Las Vegas routes. For branch rail line transportation, railcars would transfer via the Caliente Option to the Caliente Corridor at the Caliente junction.

c. For heavy-haul truck transportation, the Dry Lake junction is near the location of the proposed Apex/Dry Lake intermodal transfer station for heavy-haul trucks in southeast Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Apex/Dry Lake route.

d. For heavy-haul truck transportation, the Jean junction is near the location of the proposed Sloan/Jean intermodal transfer station for heavy-haul trucks in southern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Sloan/Jean route. For branch rail line transportation, railcars would transfer from the mainline railroad via the Wilson Pass or Stateline Pass Option of the Jean Corridor, near the Jean junction.

e. For branch rail line transportation, railcars would transfer from the mainline railroad at the Beowawe junction in north-central Nevada to the Carlin Corridor.

f. For branch rail line transportation, railcars would transfer from the mainline railroad at the Eccles junction east of Caliente, Nevada, via the Eccles Option or nearby via the Crestline Option of the Caliente or Caliente-Chalk Mountain Corridor. Impacts in states outside Nevada would be the same for the Eccles and Crestline Options of the Caliente and Caliente-Chalk Mountain Corridors.

g. For branch rail line transportation, railcars would transfer from the mainline railroad at the Apex junction in southeast Nevada, possibly via the Valley Connection, to the Valley Modified Corridor.
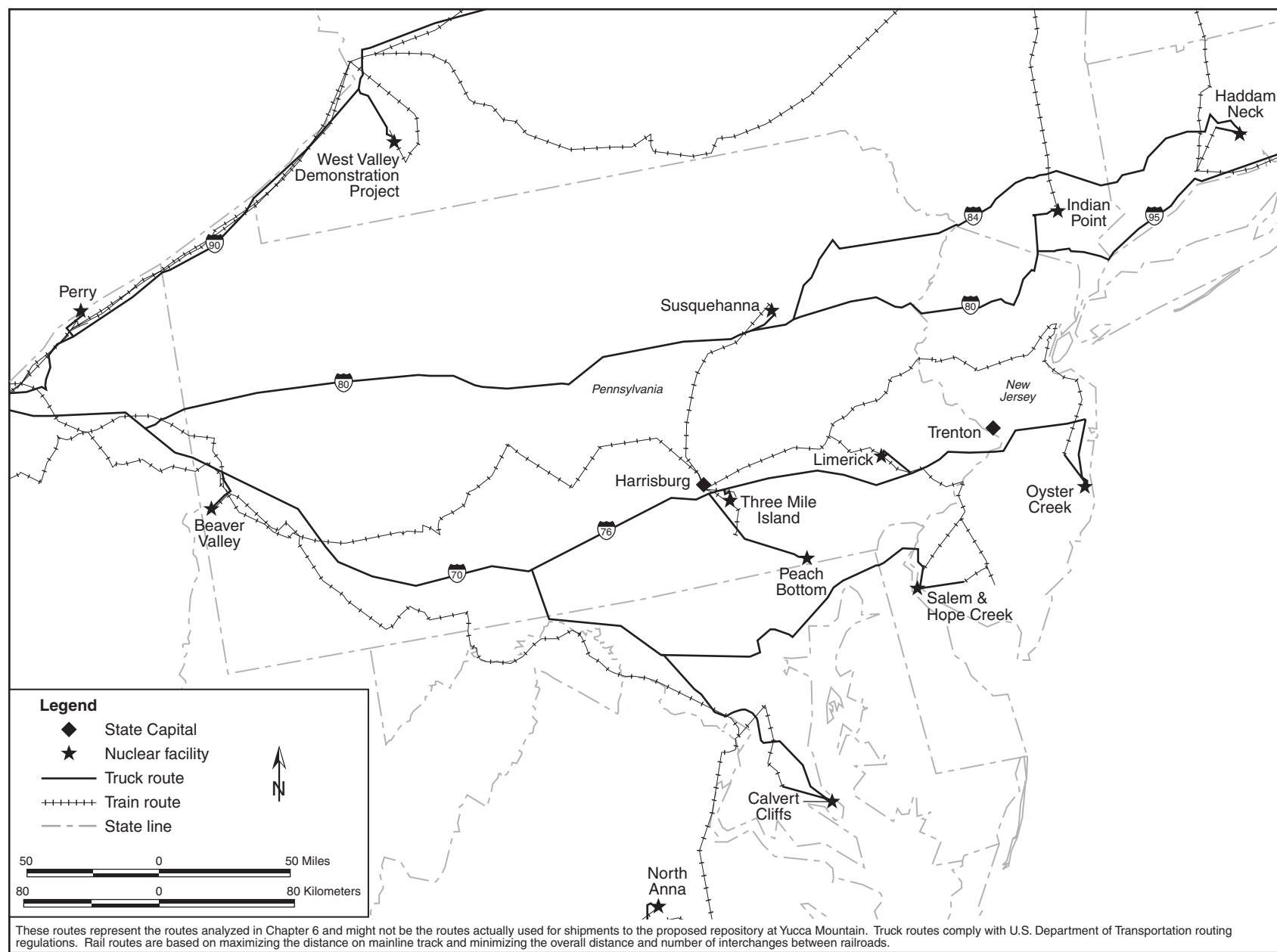
h. LCF = latent cancer fatality.

Legend

◆ State Capital

★ Nuclear facility

— Truck route

+++++ Train route

–·–·– State line

N

50 | 0 | 50 Miles

80 | 0 | 80 Kilometers

These routes represent the routes analyzed in Chapter 6 and might not be the routes actually used for shipments to the proposed repository at Yucca Mountain. Truck routes comply with U.S. Department of Transportation routing regulations. Rail routes are based on maximizing the distance on mainline track and minimizing the overall distance and number of interchanges between railroads.

Figure J-49. Highway and rail routes used to analyze transportation impacts - New Jersey and Pennsylvania.

Table J-90. Estimated transportation impacts for the States of North Carolina and South Carolina.

Impact category	Mostly legal-weight truck	Mostly rail					
		Ending rail node in Nevada[a]					
		Caliente[b]	Dry Lake[c]	Jean[d]	Beowawe[e]	Eccles[f]	Apex[g]
NORTH CAROLINA							
Shipments							
Truck (originating/total)	1,871/2,508	0/0	0/0	0/0	0/0	0/0	0/0
Rail (originating/total)	0/0	486/943	486/943	486/943	486/943	486/943	486/943
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	$2.7\times10^1/1.4\times10^{-2}$	$1.1\times10^1/5.7\times10^{-3}$	$1.1\times10^1/5.7\times10^{-3}$	$1.1\times10^1/5.7\times10^{-3}$	$1.1\times10^1/5.7\times10^{-3}$	$1.1\times10^1/5.7\times10^{-3}$	$1.1\times10^1/5.7\times10^{-3}$
Workers (person-rem/LCFs)	$8.4\times10^1/3.4\times10^{-2}$	$3.4\times10^1/1.4\times10^{-2}$	$3.4\times10^1/1.4\times10^{-2}$	$3.4\times10^1/1.4\times10^{-2}$	$3.4\times10^1/1.4\times10^{-2}$	$3.4\times10^1/1.4\times10^{-2}$	$3.4\times10^1/1.4\times10^{-2}$
Accident dose risk							
Population (person-rem/LCFs)	$3.5\times10^{-3}/1.7\times10^{-6}$	$4.2\times10^{-3}/2.1\times10^{-6}$	$4.2\times10^{-3}/2.1\times10^{-6}$	$4.2\times10^{-3}/2.1\times10^{-6}$	$4.2\times10^{-3}/2.1\times10^{-6}$	$4.2\times10^{-3}/2.1\times10^{-6}$	$4.2\times10^{-3}/2.1\times10^{-6}$
Nonradiological impacts							
Vehicle emissions (LCFs)	6.3×10^{-3}	4.1×10^{-3}	4.1×10^{-3}	4.1×10^{-3}	4.1×10^{-3}	4.1×10^{-3}	4.1×10^{-3}
Fatalities	0.023	0.052	0.052	0.052	0.052	0.052	0.052
SOUTH CAROLINA							
Shipments							
Truck (originating/total)	9,832/9,832	0/0	0/0	0/0	0/0	0/0	0/0
Rail (originating/total)	0/0	1,899/2,385	1,899/2,385	1,899/2,385	1,899/2,385	1,899/2,385	1,899/2,385
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	$1.3\times10^1/6.5\times10^{-3}$	$1.8\times10^1/8.9\times10^{-3}$	$1.8\times10^1/8.9\times10^{-3}$	$1.8\times10^1/8.9\times10^{-3}$	$1.8\times10^1/8.9\times10^{-3}$	$1.8\times10^1/8.9\times10^{-3}$	$1.8\times10^1/8.9\times10^{-3}$
Workers (person-rem/LCFs)	$2.1\times10^2/8.4\times10^{-2}$	$1.1\times10^2/4.3\times10^{-2}$	$1.1\times10^2/4.3\times10^{-2}$	$1.1\times10^2/4.3\times10^{-2}$	$1.1\times10^2/4.3\times10^{-2}$	$1.1\times10^2/4.3\times10^{-2}$	$1.1\times10^2/4.3\times10^{-2}$
Accident dose risk							
Population (person-rem/LCFs)	$1.1\times10^{-3}/5.4\times10^{-7}$	$4.6\times10^{-3}/2.3\times10^{-6}$	$4.6\times10^{-3}/2.3\times10^{-6}$	$4.6\times10^{-3}/2.3\times10^{-6}$	$4.6\times10^{-3}/2.3\times10^{-6}$	$4.6\times10^{-3}/2.3\times10^{-6}$	$4.6\times10^{-3}/2.3\times10^{-6}$
Nonradiological impacts							
Vehicle emissions (LCFs)	1.4×10^{-3}	4.3×10^{-3}	4.3×10^{-3}	4.3×10^{-3}	4.3×10^{-3}	4.3×10^{-3}	4.3×10^{-3}
Fatalities	0.03	0.08	0.08	0.08	0.08	0.08	0.08

a. Under the mostly rail scenario, rail shipments would arrive in Nevada at one of six existing rail nodes. Impacts would vary according to the node. From that node, DOE would use one of the rail or heavy-haul implementing alternatives to complete the transportation to Yucca Mountain (see Section J.1.2).

b. For heavy-haul truck transportation, the Caliente junction is the location of the proposed Caliente intermodal transfer station for heavy-haul trucks near the town of Caliente in eastern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on one of the Caliente, Caliente/Chalk Mountain, or Caliente/Las Vegas routes. For branch rail line transportation, railcars would transfer via the Caliente Option to the Caliente Corridor at the Caliente junction.

c. For heavy-haul truck transportation, the Dry Lake junction is near the location of the proposed Apex/Dry Lake intermodal transfer station for heavy-haul trucks in southeast Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Apex/Dry Lake route.

d. For heavy-haul truck transportation, the Jean junction is near the location of the proposed Sloan/Jean intermodal transfer station for heavy-haul trucks in southern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Sloan/Jean route. For branch rail line transportation, railcars would transfer from the mainline railroad via the Wilson Pass or Stateline Pass Option of the Jean Corridor, near the Jean junction.

e. For branch rail line transportation, railcars would transfer from the mainline railroad at the Beowawe junction in north-central Nevada to the Carlin Corridor.

f. For branch rail line transportation, railcars would transfer from the mainline railroad at the Eccles junction east of Caliente, Nevada, via the Eccles Option or nearby via the Crestline Option of the Caliente or Caliente-Chalk Mountain Corridor. Impacts in states outside Nevada would be the same for the Eccles and Crestline Options of the Caliente and Caliente-Chalk Mountain Corridors.

g. For branch rail line transportation, railcars would transfer from the mainline railroad at the Apex junction in southeast Nevada, possibly via the Valley Connection, to the Valley Modified Corridor.
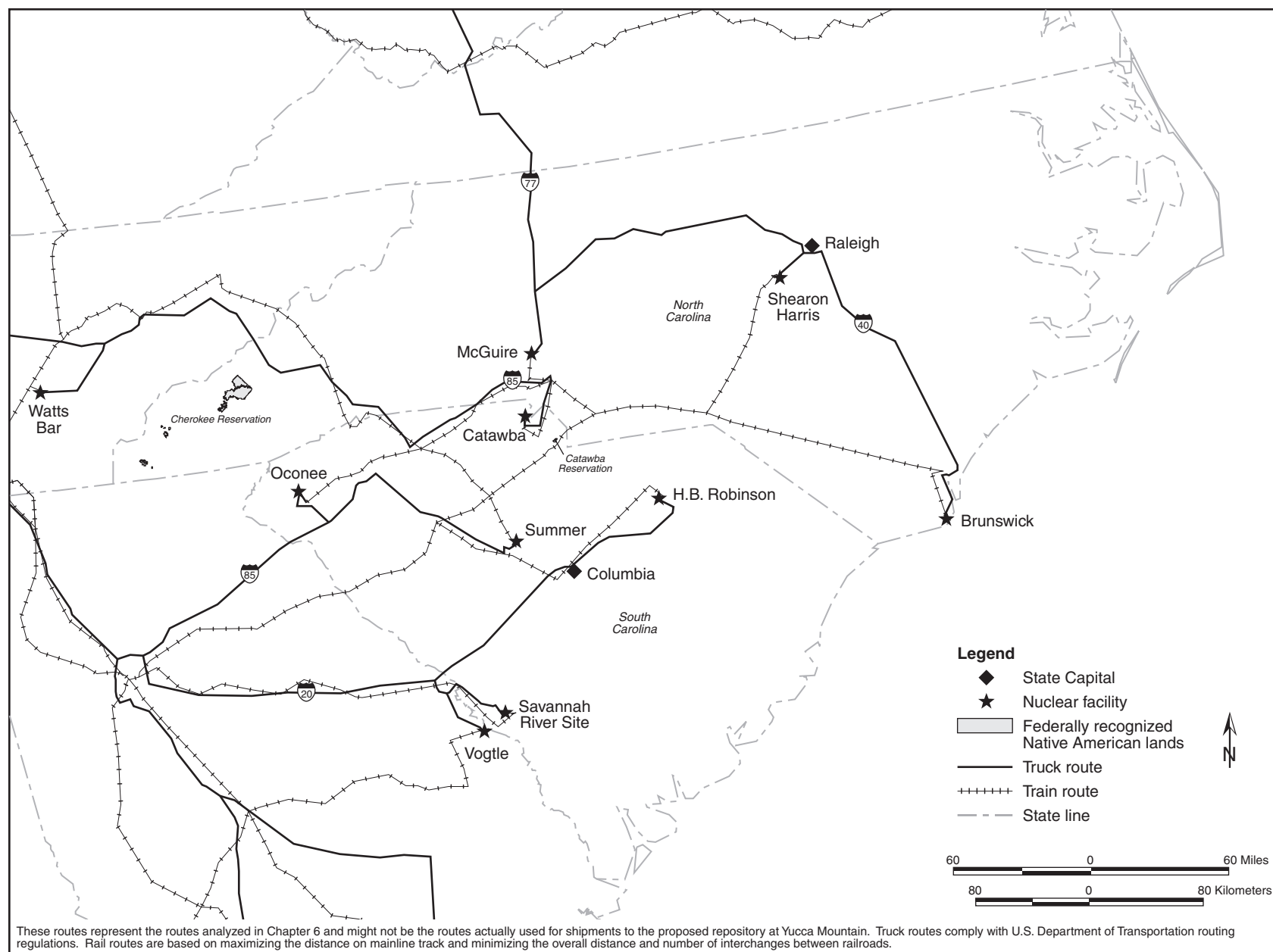
h. LCF = latent cancer fatality.

These routes represent the routes analyzed in Chapter 6 and might not be the routes actually used for shipments to the proposed repository at Yucca Mountain. Truck routes comply with U.S. Department of Transportation routing regulations. Rail routes are based on maximizing the distance on mainline track and minimizing the overall distance and number of interchanges between railroads.

Figure J-50. Highway and rail routes used to analyze transportation impacts - North Carolina and South Carolina.

Table J-91. Estimated transportation impacts for the States of Oklahoma and Texas.

Impact category	Mostly legal-weight truck	Mostly rail — Ending rail node in Nevada[a]					
		Caliente[b]	Dry Lake[c]	Jean[d]	Beowawe[e]	Eccles[f]	Apex[g]
OKLAHOMA							
Shipments							
Truck (originating/total)	0/3,471	0/0	0/0	0/0	0/0	0/0	0/0
Rail (originating/total)	0/0	0/412	0/355	0/399	0/439	0/478	0/201
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	$4.1\times10^1/2.0\times10^{-2}$	$4.1\times10^{-1}/2.0\times10^{-4}$	$4.1\times10^{-1}/2.0\times10^{-4}$	$3.3\times10^{-1}/1.6\times10^{-4}$	$5.2\times10^{-1}2.6\times10^{-4}$	$4.0\times10^{-1}/2.0\times10^{-4}$	$4.0\times10^{-1}/2.0\times10^{-4}$
Workers (person-rem/LCFs)	$1.1\times10^2/4.2\times10^{-2}$	$3.9\times10^0/1.5\times10^{-3}$	$3.6\times10^0/1.4\times10^{-3}$	$5.3\times10^0/2.1\times10^{-3}$	$4.5\times10^0/1.8\times10^{-3}$	$3.0\times10^0/1.7\times10^{-3}$	$3.0\times10^0/1.2\times10^{-3}$
Accident dose risk							
Population (person-rem/LCFs)	$2.6\times10^{-3}/1.3\times10^{-6}$	$3.4\times10^{-4}/1.7\times10^{-7}$	$3.4\times10^{-4}/1.7\times10^{-7}$	$3.1\times10^{-4}/1.6\times10^{-7}$	$4.2\times10^{-4}/2.1\times10^{-7}$	$3.5\times10^{-4}/1.7\times10^{-7}$	$3.3\times10^{-4}/1.6\times10^{-7}$
Nonradiological impacts							
Vehicle emissions (LCFs)	6.4×10^{-3}	2.3×10^{-4}	2.3×10^{-4}	1.8×10^{-4}	2.9×10^{-4}	2.3×10^{-4}	2.3×10^{-4}
Fatalities	0.043	0.005	0.005	0.007	0.006	0.006	0.004
TEXAS							
Shipments							
Truck (originating/total)	1,193/3,999	0/0	0/0	0/0	0/0	0/0	0/0
Rail (originating/total)	0/0	269/472	269/472	269/952	269/472	269/472	269/472
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	$7.9\times10^1/4.0\times10^{-2}$	$1.8\times10^1/9.1\times10^{-3}$	$1.9\times10^1/9.3\times10^{-3}$	$4.1\times10^1/2.0\times10^{-2}$	$1.9\times10^1/9.6\times10^{-3}$	$1.8\times10^1/9.0\times10^{-3}$	$2.1\times10^1/1.0\times10^{-2}$
Workers (person-rem/LCFs)	$1.9\times10^2/7.6\times10^{-2}$	$4.4\times10^1/1.8\times10^{-2}$	$4.5\times10^1/1.8\times10^{-2}$	$8.2\times10^1/3.3\times10^{-2}$	$3.9\times10^1/1.5\times10^{-2}$	$4.3\times10^1/1.7\times10^{-2}$	$4.8\times10^1/1.9\times10^{-2}$
Accident dose risk							
Population (person-rem/LCFs)	$1.7\times10^{-2}/8.6\times10^{-6}$	$7.0\times10^{-3}/3.5\times10^{-6}$	$7.3\times10^{-3}/3.7\times10^{-6}$	$2.0\times10^{-2}/9.9\times10^{-6}$	$7.2\times10^{-3}/3.6\times10^{-6}$	$7.1\times10^{-3}/3.5\times10^{-6}$	$8.1\times10^{-3}/4.0\times10^{-6}$
Nonradiological impacts							
Vehicle emissions (LCFs)	1.96×10^{-2}	7.47×10^{-3}	7.77×10^{-3}	1.87×10^{-2}	8.10×10^{-3}	7.60×10^{-3}	8.84×10^{-3}
Fatalities	0.07	0.05	0.05	0.14	0.04	0.05	0.05

a. Under the mostly rail scenario, rail shipments would arrive in Nevada at one of six existing rail nodes. Impacts would vary according to the node. From that node, DOE would use one of the rail or heavy-haul implementing alternatives to complete the transportation to Yucca Mountain (see Section J.1.2).

b. For heavy-haul truck transportation, the Caliente junction is the location of the proposed Caliente intermodal transfer station for heavy-haul trucks near the town of Caliente in eastern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on one of the Caliente, Caliente/Chalk Mountain, or Caliente/Las Vegas routes. For branch rail line transportation, railcars would transfer via the Caliente Option to the Caliente Corridor at the Caliente junction.

c. For heavy-haul truck transportation, the Dry Lake junction is near the location of the proposed Apex/Dry Lake intermodal transfer station for heavy-haul trucks in southeast Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Apex/Dry Lake route.

d. For heavy-haul truck transportation, the Jean junction is near the location of the proposed Sloan/Jean intermodal transfer station for heavy-haul trucks in southern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Sloan/Jean route. For branch rail line transportation, railcars would transfer from the mainline railroad via the Wilson Pass or Stateline Pass Option of the Jean Corridor, near the Jean junction.

e. For branch rail line transportation, railcars would transfer from the mainline railroad at the Beowawe junction in north-central Nevada to the Carlin Corridor.

f. For branch rail line transportation, railcars would transfer from the mainline railroad at the Eccles junction east of Caliente, Nevada, via the Eccles Option or nearby via the Crestline Option of the Caliente or Caliente-Chalk Mountain Corridor. Impacts in states outside Nevada would be the same for the Eccles and Crestline Options of the Caliente and Caliente-Chalk Mountain Corridors.

g. For branch rail line transportation, railcars would transfer from the mainline railroad at the Apex junction in southeast Nevada, possibly via the Valley Connection, to the Valley Modified Corridor.
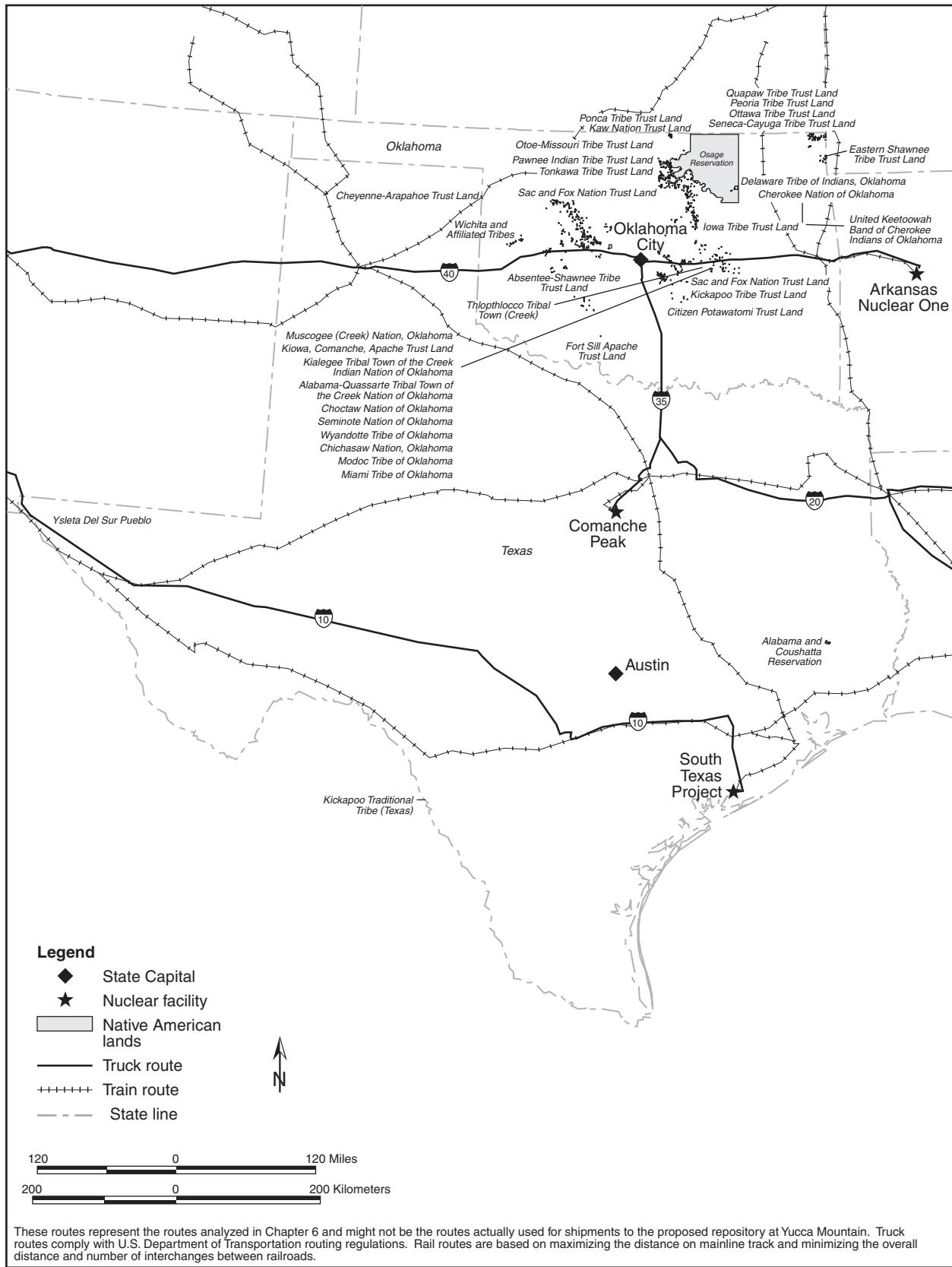
h. LCF = latent cancer fatality.

Figure J-51. Highway and rail routes used to analyze transportation impacts - Oklahoma and Texas.

Table J-92. Estimated transportation impacts for the States of Utah and Wyoming.

		Mostly rail					
		Ending rail node in Nevada[a]					
Impact category	Mostly legal-weight truck	Caliente[b]	Dry Lake[c]	Jean[d]	Beowawe[e]	Eccles[f]	Apex[g]
UTAH							
Shipments							
Truck (originating/total)	0/45,919	0/1,079	0/1,079	0/1,079	0/1,079	0/1,079	0/1,079
Rail (originating/total)	0/300	0/8,986	0/8,896	0/8,182	0/9,134	0/9,052	0/8,742
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	$9.6\times10^2/4.8\times10^{-1}$	$1.8\times10^2/8.8\times10^{-2}$	$1.8\times10^2/8.8\times10^{-2}$	$1.1\times10^3/5.6\times10^{-1}$	$1.8\times10^2/8.8\times10^{-2}$	$1.8\times10^2/8.8\times10^{-2}$	$1.7\times10^2/8.6\times10^{-2}$
Workers (person-rem/LCFs)	$1.9\times10^3/7.4\times10^{-1}$	$3.6\times10^2/1.4\times10^{-1}$	$3.6\times10^2/1.4\times10^{-1}$	$2.2\times10^3/8.8\times10^{-1}$	$3.6\times10^2/1.4\times10^{-1}$	$3.6\times10^2/1.4\times10^{-1}$	$3.6\times10^2/1.4\times10^{-1}$
Accident dose risk							
Population (person-rem/LCFs)	$1.0\times10^{-1}/5.2\times10^{-5}$	$7.2\times10^{-2}/3.6\times10^{-5}$	$7.2\times10^{-2}/3.6\times10^{-5}$	$1.8\times10^{-1}/8.8\times10^{-5}$	$7.2\times10^{-2}/3.6\times10^{-5}$	$7.2\times10^{-2}/3.6\times10^{-5}$	$7.2\times10^{-2}/3.6\times10^{-5}$
Nonradiological impacts							
Vehicle emissions (LCFs)	2.8×10^{-1}	8.7×10^{-2}	8.7×10^{-2}	3.6×10^{-1}	8.7×10^{-2}	8.7×10^{-2}	8.4×10^{-2}
Fatalities	0.71	0.58	0.58	1.25	0.58	0.58	0.57
WYOMING							
Shipments							
Truck (originating/total)	0/41,507	0/1,079	0/1,079	0/1,079	0/1,079	0/1,079	0/1,079
Rail (originating/total)	0/0	0/7,347	0/7,347	0/7,065	0/7,440	0/7,347	0/7,347
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs)[h]	$5.4\times10^2/2.7\times10^{-1}$	$4.4\times10^1/2.2\times10^{-2}$	$4.4\times10^1/2.2\times10^{-2}$	$4.3\times10^1/2.1\times10^{-2}$	$4.4\times10^1/2.2\times10^{-2}$	$4.4\times10^1/2.2\times10^{-2}$	$4.4\times10^1/2.2\times10^{-2}$
Workers (person-rem/LCFs)	$1.7\times10^3/6.9\times10^{-1}$	$3.8\times10^2/1.5\times10^{-1}$	$3.8\times10^2/1.5\times10^{-1}$	$3.7\times10^2/1.5\times10^{-1}$	$3.8\times10^2/1.5\times10^{-1}$	$3.8\times10^2/1.5\times10^{-1}$	$3.8\times10^2/1.5\times10^{-1}$
Accident dose risk							
Population (person-rem/LCFs)	$3.9\times10^{-2}/1.9\times10^{-5}$	$7.1\times10^{-3}/3.6\times10^{-6}$	$7.1\times10^{-3}/3.6\times10^{-6}$	$6.8\times10^{-3}/3.4\times10^{-6}$	$7.2\times10^{-3}/3.6\times10^{-6}$	$7.1\times10^{-3}/3.6\times10^{-6}$	$7.1\times10^{-3}/3.6\times10^{-6}$
Nonradiological impacts							
Vehicle emissions (LCFs)	38.7×10^{-3}	15.9×10^{-3}	15.9×10^{-3}	15.4×10^{-3}	16.1×10^{-3}	15.9×10^{-3}	15.9×10^{-3}
Fatalities	0.58	0.06	0.06	0.06	0.06	0.06	0.06

a. Under the mostly rail scenario, rail shipments would arrive in Nevada at one of six existing rail nodes. Impacts would vary according to the node. From that node, DOE would use one of the rail or heavy-haul implementing alternatives to complete the transportation to Yucca Mountain (see Section J.1.2).

b. For heavy-haul truck transportation, the Caliente junction is the location of the proposed Caliente intermodal transfer station for heavy-haul trucks near the town of Caliente in eastern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on one of the Caliente, Caliente/Chalk Mountain, or Caliente/Las Vegas routes. For branch rail line transportation, railcars would transfer via the Caliente Option to the Caliente Corridor at the Caliente junction.

c. For heavy-haul truck transportation, the Dry Lake junction is near the location of the proposed Apex/Dry Lake intermodal transfer station for heavy-haul trucks in southeast Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Apex/Dry Lake route.

d. For heavy-haul truck transportation, the Jean junction is near the location of the proposed Sloan/Jean intermodal transfer station for heavy-haul trucks in southern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Sloan/Jean route. For branch rail line transportation, railcars would transfer from the mainline railroad via the Wilson Pass or Stateline Pass Option of the Jean Corridor, near the Jean junction.

e. For branch rail line transportation, railcars would transfer from the mainline railroad at the Beowawe junction in north-central Nevada to the Carlin Corridor.

f. For branch rail line transportation, railcars would transfer from the mainline railroad at the Eccles junction east of Caliente, Nevada, via the Eccles Option or nearby via the Crestline Option of the Caliente or Caliente-Chalk Mountain Corridor. Impacts in states outside Nevada would be the same for the Eccles and Crestline Options of the Caliente and Caliente-Chalk Mountain Corridors.

g. For branch rail line transportation, railcars would transfer from the mainline railroad at the Apex junction in southeast Nevada, possibly via the Valley Connection, to the Valley Modified Corridor.
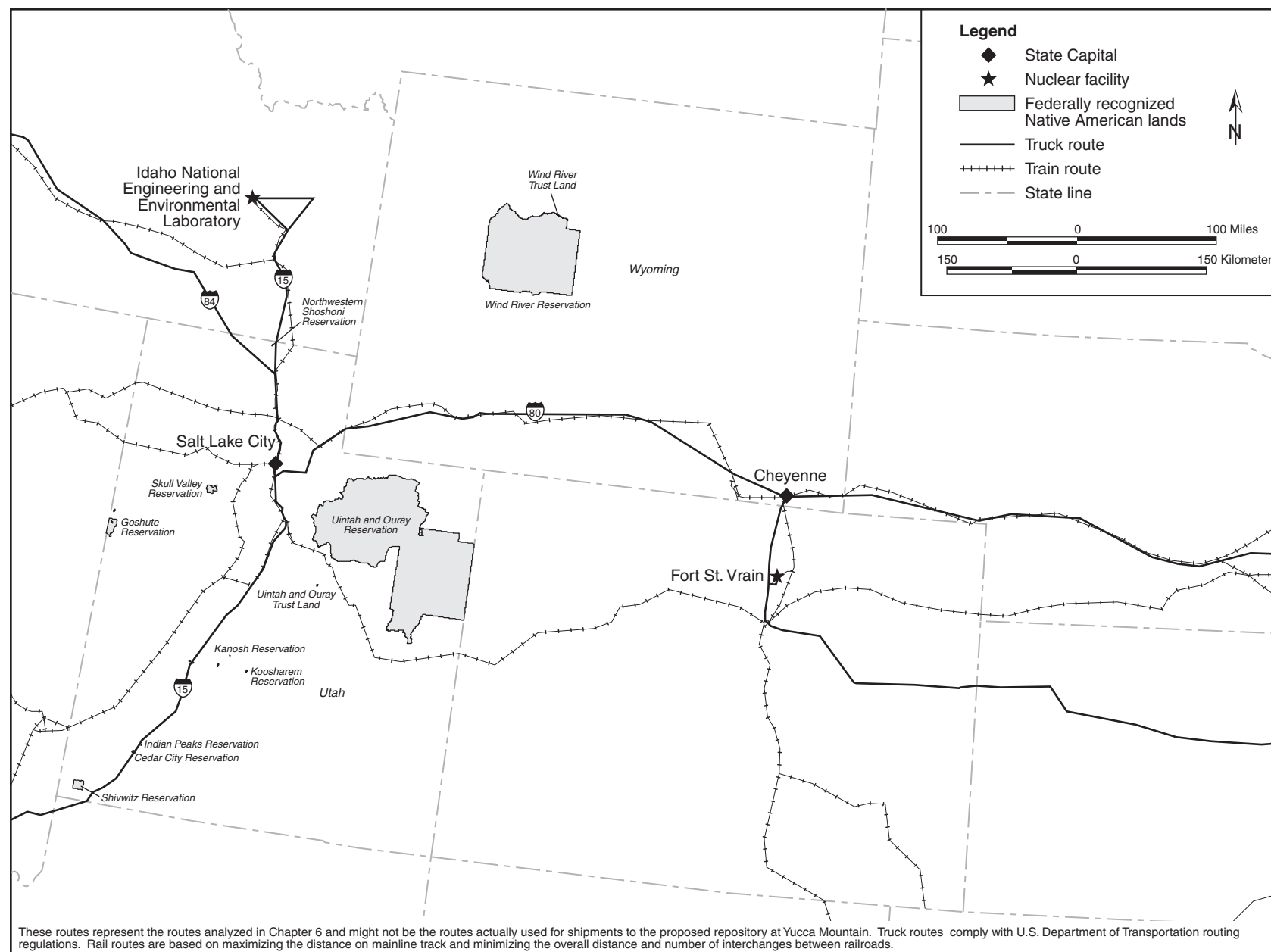
h. LCF = latent cancer fatality.

Figure J-52. Highway and rail routes used to analyze transportation impacts - Utah and Wyoming.

Table J-93. Estimated transportation impacts for the State of Nevada.

		Mostly rail									
		Rail implementing alternatives					Heavy-haul implementing alternatives				
Impact category	Mostly legal-weight truck	Caliente	Carlin	Caliente-Chalk Mountain	Jean	Valley Modified	Caliente	Caliente/Chalk Mountain	Caliente/Las Vegas	Sloan/Jean	Apex/Dry Lake
NEVADA											
Shipments											
Truck (originating/total)	0/52,786	0/1,079	0/1,079	0/1,079	0/1,079	0/1,079	0/1,079	0/1,079	0/1,079	0/1,079	0/1,079
Rail (originating/total)	0/300	0/9,646	0/9,646	0/9,646	0/9,646	0/9,646	0/9,646	0/9,646	0/9,646	0/9,646	0/9,646
Radiological impacts											
Incident-free impacts											
Population (person-rem/LCFs)[a]	3.5×10^2/ 1.8×10^{-1}	1.9×10^1/ 9.4×10^{-3}	3.8×10^1/ 1.9×10^{-2}	1.8×10^1/9.1×10^{-3}	1.6×10^2/ 7.8×10^{-2}	2.6×10^1/ 1.3×10^{-2}	7.9×10^1/ 3.9×10^{-2}	6.3×10^1/3.2×10^{-2}	2.2×10^2/ 1.1×10^{-1}	3.3×10^2/ 1.7×10^{-1}	1.6×10^2/ 7.8×10^{-2}
Workers (person-rem/LCFs)	1.9×10^3/ 7.5×10^{-1}	8.3×10^2/ 3.3×10^{-1}	9.6×10^2/ 3.8×10^{-1}	7.3×10^2/2.9×10^{-1}	7.4×10^2/ 3.0×10^{-1}	7.0×10^2/ 2.8×10^{-1}	1.4×10^3/ 5.5×10^{-1}	9.8×10^2/3.9×10^{-1}	1.1×10^3/ 4.5×10^{-1}	9.3×10^2/ 3.7×10^{-1}	8.9×10^2/ 3.5×10^{-1}
Accident dose risk											
Population (person-rem/LCFs)	5.3×10^{-2}/ 2.6×10^{-5}	1.7×10^{-3}/ 8.6×10^{-7}	2.6×10^{-3}/ 1.3×10^{-6}	1.7×10^{-3}/8.5×10^{-7}	7.1×10^{-3}/ 3.6×10^{-6}	2.1×10^{-3}/ 1.0×10^{-6}	1.0×10^{-2}/ 5.1×10^{-6}	2.0×10^{-3}/1.0×10^{-6}	5.6×10^{-2}/ 2.8×10^{-5}	1.2×10^{-1}/ 6.0×10^{-5}	5.6×10^{-2}/ 2.8×10^{-5}
Nonradiological impacts											
Vehicle emissions (LCFs)	9.3×10^{-2}	7.1×10^{-3}	1.8×10^{-2}	7.7×10^{-3}	7.7×10^{-2}	1.1×10^{-2}	1.6×10^{-2}	7.9×10^{-3}	6.4×10^{-2}	1.9×10^{-1}	6.6×10^{-2}
Fatalities	0.49	0.07	0.09	0.05	0.06	0.05	0.60	0.33	0.43	0.25	0.23

a. Includes impacts of an intermodal transfer station.
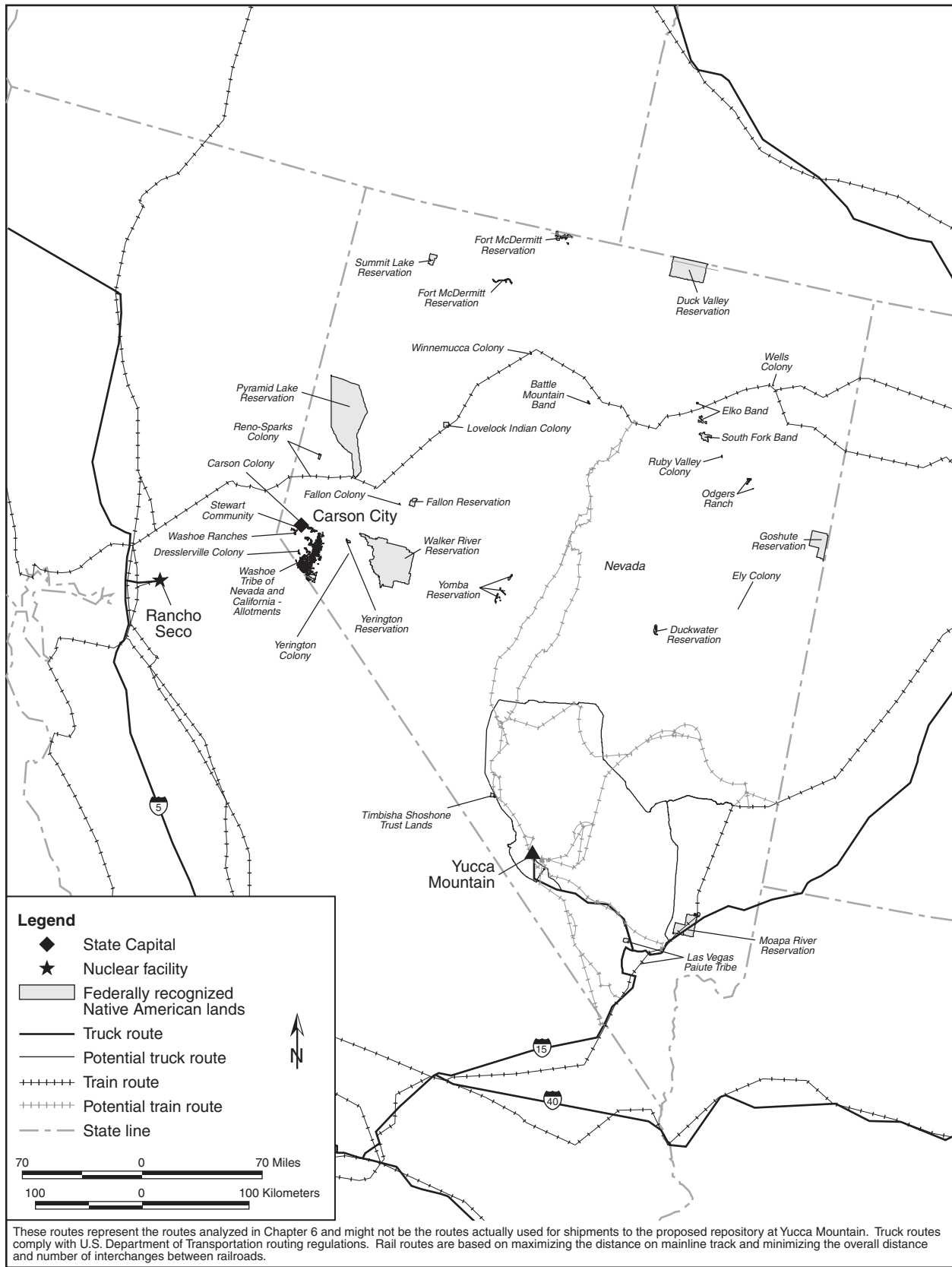b. LCF = latent cancer fatality.

Figure J-53. Highway and rail routes used to analyze transportation impacts - Nevada.